



# CONDUCT OF OPERATIONS COURSE

**Lesson Title:** Investigation and Notifications

**Reference:**

- (a) DOE 5480.19, Conduct of Operations Requirements for DOE Facilities  
Chapter 6 Investigation of Abnormal Events  
Chapter 7 Notifications
- (b) DOE O 232.1, Occurrence Reporting and Processing of Operations Information
- (c) Rocky Flats Field Office General Technical Base Study Guide
- (d) Operating Experience Weekly Summaries
- (e) DOE-STD-1045-93, Guide to Good Practices for Notification and Identification of Abnormal Events

**Objective:** Upon completion of this lesson:

1. Understand the requirements of DOE 5480.19 regarding investigations and notifications at DOE facilities and associated impact on safety and efficiency of operations. (1.b)
2. Referring to actual copies of facility Occurrence Reports, discuss how a lack of proper conduct of operations led to improper operational results. (1.e)
3. Discuss proper critique principles and describe a proper critique process, including key elements. (1.h)

- 
- 
4. Define root cause and explain its importance to operational safety. (1.i)
  5. Define and describe what lessons learned are and explain their importance to operational safety. (1.j)
  6. State the purpose of ORPS and the process. (1.m)
  7. Describe the key elements that determine the safety significance of a condition. (1.n)
  8. Explain the role of lessons learned to operations, and sources for identifying lessons learned and industry experience. (2.m)
  9. Refer to a copy of DOE 5480.19 and locate applicable guidelines and requirements for specific activities. (1.a)

---

---

## I: Guidelines

### A. Components: DOE 5480.19 Chapters 6, 7

1. **Investigation of Abnormal Events:** Ensures that a facility's abnormal events are thoroughly investigated to assess the event's impact, to determine its root cause, to ascertain whether or not it is reportable under DOE guidelines, and to identify corrective actions to prevent its recurrence.

- Events Requiring Investigation:

- Investigation Responsibility:

- Investigator Qualification:

- Information to be Gathered:

- 
- 
- Event Investigation: Upon completion of data collection, a structured review of the event is performed, consisting of the following steps:

Event Reconstruction -

Event Analysis and Evaluation -

Root Cause Determination -

Corrective Action Determination -

Critique Process - The purpose of a critique is to assemble all of the facts about an event or operation. It is not to assign blame or be used as a basis to administer disciplinary action against an involved employee. The principles and elements of a good critique process are summarized as follows:

- Initial categorization and notification using DOE 0 232.1 is made before or concurrently with the critique meeting. DOE 0 232.1 requires this to be done within 2 hours of discovery of the event's happening. Critique meetings, with few exceptions, should be held as soon as the situation is stable.
- 
-

- 
- 
- A leader, who is trained in proper critique methods, is assigned. It may be necessary to assign a leader who was not involved in the event to prevent prejudice or inappropriate influence of the outcome.
  - Before a critique convenes, the leader determines if personal statements are necessary. If so, statements will be obtained. The statements, are preferably prepared before the critique meeting starts and before personnel can discuss the event (collaboration can greatly reduce the value of statements).
  - Both off-normal events and successes are critiqued. The critique of off-normal events provides the basis for understanding why something went wrong and how to prevent its recurrence. The critique of successes is important because we want to be able to repeat the success and we may find ways of improving upon the success at the same time.
  - Formal critique minutes are prepared and serve as the record of what happened for simple events, and the foundation for any subsequent investigation, if warranted, for more complex events. Critique minutes facilitate the assignment of corrective action responsibility and provide the basis from which root cause and recurrence control can be determined. Completed personal statements are attached to the meeting minutes.

Safety Significance - The Limiting Conditions for Operation (LCOs), required to be maintained to provide a "safe" facility environment, are defined in the facility Final Safety Analysis Report (FSAR). A condition having safety significance has some chance of challenging one or more of these LCOs. Also any condition, besides those addressed by the FSAR, that could adversely affect the health and safety of workers in the facility would have safety significance. Examples of conditions having safety significance are:

- - 
  - 
  - 
  - 
  -
- 
-

- 
- 
- Investigative Report:

Lessons learned -

Sources:

ORPS -

- Event Training:
  - Event Trending:
  - Sabotage:
- 
-

---

---

**2. Notifications:** Timely notification of appropriate DOE personnel and other agencies, is made when required to ensure that the facility is responsive to the health and safety concerns of the public.

- Notification Procedures:
- Notification Responsibility:
- Names and Phone Numbers:
- Documentation:
- Communication Equipment:

---

---

## II: Occurrence Report Exercise

### Occurrence 1

An Operations Manager and Facility Manager conducted a safety walkdown and noticed unlanded power leads for an air compressor. The unlanded leads (not connected and ends were not covered) were verified to have no voltage and were covered with electrical tape on the exposed ends.

Investigators learned that maintenance electricians performed continuity checks on the air compressor, which was not properly operating five months earlier, using a single point lockout. During the maintenance, electricians found damaged starter contacts, motor windings, and fuses. Due to pending facility de-activation, managers decided to not repair the air compressor, effectively closing out the maintenance activity. Afterward, the lockout was removed, however, the exposed leads were never terminated.

Investigators also determined that operators performing tours of the maintenance area (three times per shift over the five month period), had never noticed the exposed leads. Investigators also found an upstream circuit breaker which was left open, but not tagged, when the air compressor was taken out of service.

1. How did poor conduct of operations contribute to the occurrence of this event?
  
  
  
  
  
  
  
  
  
  
2. What requirements were violated?
  
  
  
  
  
  
  
  
  
  
3. What is the major contributing cause?

---

---

## Occurrence 2

Before commencing operations, the central control room operator was conducting pre-operational checks and noticed there was no position indication for a motor-operated valve on the distributed control system faceplate, but the graphics system display showed the valve closed. The Electrical and Instrumentation mechanics were notified and conducted an examination of the valve. The mechanics discovered that electrical leads for the valve were lifted.

Investigation determined that two days earlier, engineering personnel conducted a diagnostic test on the valve. Upon completion of the test, the engineering personnel did not inform the electrical mechanic responsible for restoring the circuit that the test was complete. As a result, the system was not restored. The following day, operations personnel asked the shift electrical mechanic to sign off the lockout to signify that the work was complete. During the maintenance shift turnover, the electrical mechanic was not informed of the lifted leads. He assumed the leads were landed and signed off the lockout without verifying work completion.

1. How did poor conduct of operations contribute to the occurrence of this event?
  
  
  
  
  
  
  
  
  
  
2. What requirements were violated?
  
  
  
  
  
  
  
  
  
  
3. What is the major contributing cause?

---

---

**NOTES**